REMARKS

Claims 1-12 are pending.

Claims 1-12 stand rejected.

Claims 1-3, 6 and 11 have been amended.

Claims 1-12 are presented herein for further consideration on the merits.

No new matter has been added.

Applicants begin by noting that there are a number of changes to the specification regarding the changing of the term "drawing" to "spinning." This change is made to allow the U.S. application to more closely comport to the originally filed French priority application (FR 02 11521). In the priority application, the original term is "filage" which more appropriately translates into "spinning." This Amendment does not constitute new matter as it is both a simple terminology change, and because it is included in the original priority document which is incorporated by reference. The corrected term spinning refers throughout to the process where by the diameter of the preform is reduced to the optical fiber diameter.

Turning now to the rejection of the claims, claims 1-12 are rejected under 35 U.S.C. § 112 for containing new matter. Applicants respectfully disagree.

The present invention, as claimed in claim 1, is directed to a method of fabricating a graded index plastics material optical fiber whose refractive index varies

between its center and its periphery. The method includes preparing at least two liquid compositions with different refractive indices, each composition having at least one polymer, a substance adapted to vary the refractive index being present in at least one of said compositions, and a cross-linking starter being present in at least one of the compositions.

A preform formation system is filled with the compositions and a liquid preform is produced in the preform formation system. The refractive index of the liquid preform has a given gradient, and the gradient is formed within the preform formation system with substantially no flow along the system.

After the liquid preform exits the preform formation system, the liquid perform is subjected to spinning to obtain a graded index plastics material optical fiber.

Applicants contend that the spinning of the *liquid* preform is fully supported in the specifictaion. The specification of the present invention includes numerous accounts that describe the preform being a liquid state when it is spun. In fact the entire summary of the invention describes the desire for such a process (spinning of the liquid preform) and the reason for such a process. See paragraph [0026] Specifically, the preceding paragraphs [0024] and [0025] state:

> [0024] According to the invention, the preform can be produced without stresses that are present in the prior art continuous method and are related to the flow of the compositions. By eliminating the correlation between the rate at which the preform is produced and the rate at which it is drawn, the invention eliminates the constraints on the maximum production time of the preform.
>
> [0025] Thus the invention consists in separating the production of a liquid preform (in other words a column) from spinning it, for example by dissociating them temporally. (emphasis added)

Spinning "it" clearly refers to the liquid preform. This interpretation is consistent throughout the specification.

Applicants note, as indicated by the Examiner that the liquid preform is also modified in diameter within the preform formation system. However, this is not the process of spinning that is referred to in the claim, but rather another step of diameter reduction that occurs prior to spinning *so that the preform is compatible with spinning.* This step is described in paragraph [0031] and [0032] and is claimed in dependent claim 3. For example, paragraphs [0031] and [0032] state:

> [0031] In a first embodiment of the method according to the invention, said step with substantially no flow includes a step of obtaining a diameter of the preform compatible with said spinning.
> [0032] By diameter compatible with said drawing is meant a diameter up to approximately 20 to 30 times greater than the required diameter of the finished fiber.

In view of this, Applicants respectfully submit that the claims of the present invention, and in particular independent claim 1 is fully supported by the specification and request that the rejection of the claims under 35 U.S.C. § 112 be withdrawn.

Turning to the prior art rejections, independent claim 1 remains rejected under 35 U.S.C. § 103(a) as being unpatentable over Kim (U.S. Patent No. 6,563,994) in view of Perrin (U.S. Patent No. 6,576,166). Applicants respectfully disagree for all the reasons of record and additionally for those reasons now presented.

As noted above the present invention includes the limitation that after filling of the preform formation system with the compositions, a liquid preform is produced in the preform formation system, the refractive index of the liquid preform having a given

gradient, where the gradient is formed within the preform formation system with substantially no flow along the system. After the liquid preform exits the preform formation system, spinning is applied to the liquid perform to obtain a graded index plastics material optical fiber.

As noted previously and in the background section of the specification, the prior art methods for obtaining a graded index optical fiber includes, among other steps, making a preform and spinning the preform down to a final optical fiber. As noted in paragraph [0016] these two steps are done continuously in the prior art. The present invention does not do these two steps continuously, but instead performs the gradient formation with no flow along the system, then thereafter, performs the spinning step on the liquid preform. This results in the stated advantages as noted in paragraph [0024].

The primary cited prior art reference is Kim. The Examiner contends that this reference teaches all of the elements of claim 1 except the spinning of a liquid preform. However, the Examiner notes that Perrin teaches the drawing (or spinning) of a liquid prefrom and that it would be obvious to modify Kim as taught by Perrin in order to arrive at the present invention as claimed. Applicants respectfully disagree.

Applicants begin by noting that there is no teaching or suggestion in either Kim or Perrin that suggest modifying Kim by spinning the preform when in a liquid state. Kim discloses a method for making an optical fiber where the gradient is formed with an improved tolerance. As seen from the Figures, Kim discloses the manufacture of a fiber that displays a shape or design in the center of the fiber.

As noted in column 5, lines 49-55, the material in the inner section has a high refractive index and the material in the outer section has a lower refractive index. As

noted in column 6, lines 3-14 this gradient polymer is completely polymerized or in any event in heavily polymerized to the point of having a high viscosity. Furthermore, in column 9, lines 5-9 and 21-25 it is clear that the cylindrical object is solidified before it is thermally drawn into the final rod lens.

The entire specification of Kim, including these specific portions, are directed to the formation of a solid preform, including the concentrations of the polymers as well as the manner informing the gradient. It is not obvious to one of ordinary skill in the art to modify such a system by removing the preform as liquid and performing the spinning in the liquid state. In fact, the spinning of the preform of Kim in a liquid state may not work at all with the Kim method as it may materially alter the intended effect of the "interior design."

Applicants submit that it is not obvious to one of ordinary skill in the art to modify Kim using Perrin or any other reference to spin the preform when the preform is in a liquid state. For at least this reason, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 103(a) be withdrawn.

However, even if the references were combined as suggested by the Examiner, the combined references still do not teach or suggest all of the elements of the present invention as claimed in claim 1.

Perrin does not teach the spinning of the liquid preform. The Examiner contends that such a teaching is found in column 4 of Perrin where the preform is subjected to a reduction in diameter by die 15. However, this is not a spinning process as is understood in the art, but rather a reduction in diameter that occurs during the mixing phase in the preform formation system.

In fact, the Examiner has noted on page 2 of the present Office Action (in relation to the § 112 rejection) that the present invention *does* support, "the aspect of the liquids flowing down the tapered tube 2 to form a liquid preform that is smaller in diameter than the one formed initially. *However, this is not drawing in the sense that is conventionally used.*"

However, this reduction in diameter within the preform formation system of the present invention is similar to the diameter reduction as noted in Perrin. The Examiner acknowledges that this is *not* "drawing" (or spinning) in support of the § 112 rejection, but uses a similar description from the Perrin reference to mean the exact opposite, namely to support that Perrin does teach a "drawing" of the liquid preform.

Applicants acknowledge that in both the Perrin reference and the present invention the diameter of the preform is reduced in some amount, and neither case constitutes spinning drawing. The support for spinning of the preform in a liquid state in the present invention is noted above with respect to the § 112 rejection arguments. Perrin on the other hand does not show such a spinning step on the preform in a liquid state.

As such, the cited prior art, either alone or in combination with one another, does not teach or suggest the present invention as claimed. For example, there is no teaching or suggestion in either Kim or Perrin that discloses producing a liquid preform in the preform formation system, the refractive index of the liquid preform having a given gradient, where the gradient is formed within the preform formation system with substantially no flow along the system. And, after the liquid preform exits the preform formation system, spinning is applied to the liquid perform to obtain a graded index plastics material optical fiber.

For this additional reason Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. § 103(a) be withdrawn.

As claims 2-12 depend from independent claim 1 they should be allowed for the same reasons as set forth above. It is noted that in paragraph 2 of the Office Action, the Examiner has rejected claims 7 and 9 under 35 USC § 102(b) as being anticipated by Kim. This is originally based on the fact that original claim 1 did not include the preform being in a liquid state when spun. This has been amended and for the reasons set forth above, this separate rejection should be removed.

In view of the foregoing, Applicants respectfully submit that the pending claims 1-12 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application he is invited to contact the undersigned at the number listed below.

Respectfully submitted,

By _____

Joseph Sofer
Reg. No. 34,438
Sofer & Haroun, L.L.P.
317 Madison Avenue, Suite 910
New York, NY 10017
(212) 697-2800
Customer # 39600

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